

CLAIMS

What is claimed is:

1. A bond tool for attaching a wire to a bond,  
comprising:
  - 5 a guide portion for guiding the wire;
  - a grooving portion adjacent to the guide  
portion for forming a groove in the bond; and
  - a staking portion adjacent to the grooving  
portion for closing the groove, wherein the guide  
10 portion, grooving portion, and staking portion are  
all located on the bond tool.
2. The bond tool of Claim 1, wherein the guide  
portion and the staking portion are approximately V-  
15 shaped and the grooving portion is an approximately  
inverted V-shape.
3. The bond tool of Claim 2, wherein the staking  
portion has a shallower V-shape than the guide portion.  
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4. The bond tool of Claim 1, wherein the wire is a  
filament.
5. The bond tool of Claim 1, wherein the attaching  
25 is with ultrasonic energy and pressure.
6. The bond tool of Claim 1, wherein the bond is an  
aluminum bond.
- 30 7. A bond head for attaching a wire to a bond,  
comprising:
  - a rotatable spool containing the wire;

a dancer arm assembly comprising an arm and a pulley connected to the arm, wherein the wire is laid out from the spool and along the pulley;  
a bond tool for attaching the wire to the bond;  
5 and  
a clamp located between the pulley and the bond tool.

8. The bond head of Claim 7, wherein the bond tool  
10 comprises a guide section, a grooving section, and a staking section.

9. The bond head of Claim 7, wherein the attaching  
is with ultrasonic energy and pressure.  
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10. The bond head of Claim 8, wherein the grooving  
section forms a groove in the bond.

11. The bond head of Claim 10, wherein the staking  
20 section closes the groove over the wire in the bond.

12. The bond head of Claim 7, wherein the clamp  
comprises:

a first clamp half; and  
25 an opposing second clamp half, wherein each  
clamp half has a first opening for entry of the  
wire, a second opening for exit of the wire, and a  
gripping region, with the entry and exit wider than  
the gripping region.

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13. The bond head of Claim 12, wherein the first  
and second clamp halves have opposing curved portions  
forming the first opening.

14. The bond head of Claim 12, wherein the first clamp half is fixed and the second clamp half is moveable.

5        15. A clamp for holding a wire from a spool, comprising:

         a first clamp arm having a curved first portion and a second portion, wherein the curved first portion is closer to the spool than the second portion; and

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         an opposing second clamp arm having a curved first portion and a second portion, wherein the curved first portion is closer to the spool than the second portion, and wherein an opening formed from the two curved first portions is wider than a gripping region formed from the two second portions.

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16. The clamp of Claim 15, wherein the first clamp arm is fixed and the second clamp arm is moveable.

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17. The clamp of Claim 15, wherein opposing sides of the first and second clamp arms diverge from the gripping region to a second opening opposite the first opening.

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18. A method of attaching a wire to a bond, comprising:

         forming a groove in the bond;  
         placing the wire in the groove; and

30        closing the groove around the wire.

19. The method of Claim 18, wherein the forming is by ultrasonic energy and pressure.

20. The method of Claim 19, wherein the pressure is from pressing a bond tool with a grooving portion onto the bond.

5        21. The method of Claim 20, wherein the bond tool moves in an approximately perpendicular direction to the bond.

22. The method of Claim 18, wherein the closing is  
10 by ultrasonic energy and pressure.

23. The method of Claim 22, wherein the pressure is from pressing a bond tool with a staking portion onto the bond.

15        24. The method of Claim 22, wherein the staking portion has an inverted V shape.

25. The method of Claim 18, wherein the forming,  
20 placing, and closing is performed with a single pass of a bond head.

26. The method of Claim 18, wherein the wire is a filament.

25        27. The method of Claim 18, wherein the bond is an aluminum wire bond.